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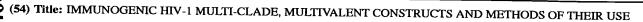
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(57) Abstract: Described herein are nucleic acid molecules which encode multiple highly conserved epitopes from HIV-1 proteins, and optionally also epitopes from CCR5; usually also included sequences that encode spacers between two or more of the epitopes. Some of the provided nucleic acid molecules further include sequences that encode targeting domains, useful for targeting the encoded protein into a pathway for enhancing epitope presentation in a vertebrate immune system. Also described are multivalent proteins encoded for by these nucleic acid molecules. The disclosure also encompasses immunogenic compositions that comprise one or more of the nucleic acid molecules, and/or one or more of the proteins encoded thereby, as well as methods of inducing an immune response against HIV-1 in a subject by administering to the subject an effective amount of a composition containing one or more of these molecules. Also provided are cultured host cells containing within them one or more of the described nucleic acid molecules.



## INTERNATIONAL SEARCH REPORT

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A. CLASS IPC 7	SIFICATION OF SUBJECT MATTER C07K14/16 A61K39/21				
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С. DOCUM	ENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the re	elevant passages	Relevant to claim No.		
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"P" docume later th	ent published prior to the international filing date but name the priority date claimed	in the art.  *8* document member of the same patent family			
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2	December 2004	11/01/2005	·		
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	European Patent Office, P.B. 5818 Patentiaan 2 NL – 2280 HV Rijswijk				
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016 Young, C					
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C.(Continu Category *	ation) DOCUMENTS CONSIDERED TO BE RELEVANT  Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Category	Oldion of document, was indicately, whose appropriately of the following passages	
X	SINGH RANA A K ET AL: "Generation of genome-wide CD8 T cell responses in HLA-A*0201 transgenic mice by an HIV-1 ubiquitin expression library immunization vaccine."  JOURNAL OF IMMUNOLOGY, vol. 168, no. 1, 1 January 2002 (2002-01-01), pages 379-391, XP002308576 ISSN: 0022-1767 the whole document	1-26
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## INTERNATIONAL SEARCH REPORT

national application No.

PCT/US2004/009767

Вох	No. I	Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)
1.	With	regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed tion, the international search was carried out on the basis of:
	a.	type of material  X a sequence listing table(s) related to the sequence listing
	b.	format of material  X In written format  X in computer readable form
	c.	time of filling/furnishing  X contained in the international application as filed  filed together with the international application in computer readable form  X furnished subsequently to this Authority for the purpose of search
2.	х	In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3.	Additi	onal comments:

## INTERNATIONAL SEARCH REPORT

nformation on patent family members

Int onal Application No
Poly US2004/009767

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